

The observations recorded daily will be collected at the end of each month at San Juan, P. R., the headquarters of the new climatological service, and published in a form similar to the climatological section reports being published by the Weather Bureau in each of the States of the Union.

The working out of the details of the organization here outlined will require time, but there is every indication that the cordial cooperation of the foreign Governments concerned will enable the Chief of Bureau to establish, within a year or two, a climatological organization in the tropical area to the south of us which is destined to be of as great value to the agricultural interests of the world as the storm-warning system has proved to be to the shipping and commercial interests in the past 20 years.

Additional plans of the Chief of the Weather Bureau for the tropical organization at San Juan include experiments in upper air conditions in the Tropics to advance our knowledge of the general circulation of the atmosphere and the development of storms within the hurricane belt and to aid in charting aerial routes for the aviator of the future.

AEROLOGICAL WORK IN THE U. S. NAVY.¹

By Lieut. C. N. KEYSER, U. S. N.

[Author's abstract.]

The Navy has contributed from an early time to the development of meteorology in the United States. The work of Lieut. Maury as early as 1844 is conspicuous as an example of this effort. The development of naval aviation made necessary the training of an Aerological Section, whose value during the war was such as to make its continuation necessary. Its importance as a peace-time activity has been demonstrated in connection with the trans-Atlantic flights and the recruiting trip of the *NC-4* along the coast and up the Mississippi. All of these undertakings were in conjunction with the Weather Bureau, with which the Navy maintains close cooperation. Excellent communication, such as provided by the telegraphic service of the Weather Bureau in conjunction with the radio service of the Navy, has been found of prime importance. The Meteorological Society should prove an excellent medium for cooperation between the Weather Bureau and all other agencies interested in the development of the science of meteorology.

REPORT OF THE CHIEF OF THE WEATHER BUREAU, 1918-19.

The Report of the Chief of the Weather Bureau for the fiscal year ending June 30, 1919, recently published, contains, in addition to the report on the usual and well-known phases of the Bureau's work, certain other interesting material. Occupying a conspicuous place in the report is a discussion of the part the Weather Bureau played in war-time meteorology in such activities as the establishment of aerial wind forecasts, and cooperation with the Army among established aerological stations; examples of the relation between the work of the Bureau and aeronautics are given in the successful trans-Atlantic flights of the *NC-4* and the British dirigible *R-34*. The "Highways Weather Service," which is a new project, is one of great interest and value, in which the principal Weather Bureau stations keep in touch with the

condition of roads and important highways; the service has proved so popular to motorists and others who have frequent use for road information that it has already proved its value. Investigations in volcanology were begun at Kilauea Volcano in Hawaii, with the expectation that they may be extended to volcanoes in Alaska and other portions of the possessions of the United States. Hampered as they were by the war, marine observations are once more being established and extended upon a program which will lead to much more extensive observations over the great ocean areas.—C. L. M.

REPORT OF THE BRITISH METEOROLOGICAL COMMITTEE.

[Reprinted from *Nature*, London, Jan. 1, 1920, pp. 446-447.]

A report of the Meteorological Committee for the year ended March 31, 1919, has recently been issued. This is the first report since the Armistice, and much interesting information is given in it. Immense strides have been made in meteorology, and the Meteorological Office has expanded accordingly, dependent on the necessities of the war. Whereas the sum available, including many costs for the Services, in the year 1913-14 was 29,380*l.*, in 1918-19 it was 66,371*l.* A much greater demand was made on the office for meteorological instruments, and for forecasts of all descriptions, including the upper air. The marine division, on the other hand, which is dependent for its information on the Royal Navy and mercantile marine, experienced a great falling off in the number of documents received from observers at sea, the documents numbering 2,738 in the year 1913-14 and only 43 in 1918-19. Throughout the war there was great activity in the supply of data to the Army, Navy, and Air Service, and the work commonly undertaken in times of peace was greatly augmented, although most of the information was considered private and was withheld from the general public. The restrictions upon the circulation of meteorological information were removed after the signing of the Armistice. Reports for the several branches of the office show the variety and extended work now undertaken. Any future report will presumably be made through the Air Ministry, to which the Meteorological Office is now responsible.

NEW FORM OF BRITISH DAILY WEATHER REPORT.

Since April 1, 1919, the Daily Weather Report of the Meteorological Office has been issued in three sections. The following is quoted from the official announcement of the change:

- I. British Section (B. report). (pp. 4.)
- II. International Section (I. report). (pp. 4.)
- III. Upper Air Supplement. (p. 2.)
- I. The British Section (B. report) is issued daily at noon, in time for circulation by midday post. It contains:
 - (a) Statistics for British stations observing four times a day at 1h., 7h., 13h., and 18h.
 - (b) Statistics for British stations observing twice a day at 7h. and 18h.
 - (c) Particulars of sunshine, etc., reported from health resorts.
 - (d) Weather map for northwest Europe for 7 h. G. M. T. on the scale 1:10,000,000, with inset maps showing the distribution over the British Isles of upper and lower cloud and visibility.
 - (e) A summary of the weather over the British Isles by districts at 7 h.
 - (f) Forecasts for the districts of the British Isles for the 24 hours commencing at 3 p. m., with a "further outlook" if conditions are sufficiently definite.
- II. The International Section (I. report) will be issued for the present on the morning of the day following that to which the report refers, in time for circulation with the day's British Section. It contains:

¹ Presented before American Meteorological Society, St. Louis, Mo., Dec. 30, 1919.

- (a) Statistical data for foreign stations.
 - (b) Weather maps on the scale 1:20,000,000 for 1h., 7h., 13h., and 18h., the maps for 7h. and 18h. covering a wide area.
 - (c) Particulars of observations from ships received by wireless telegraphy.
 - (d) Notes on the weather.
- III. The Upper Air Supplement is issued daily at noon. It contains:
- (a) Maps showing the direction and velocity of the wind at different levels for 13h. and 18h. of the day preceding that of issue, and for 7h. of the day of issue as deduced by observations of pilot balloons and other methods at the office observatories and the meteorological stations of the Air Ministry.
 - (b) Particulars of upper air temperatures that may have been reported to the office.
 - (c) Notes on the upper air.

INTERNATIONAL METEOROLOGICAL COMMITTEE MEETING IN LONDON, JULY, 1919.

The British Meteorological Office has published the minutes of the meeting of the International Meteorological Committee which was held in London, July 3 to 9, 1919 (M. O. 237). The American representative at this meeting was Dr. L. A. Bauer, department of terrestrial magnetism, Carnegie Institution, in place of Prof. C. F. Marvin, Chief of the Weather Bureau, who found it impracticable to attend.¹

The minutes consist not only of the discussions at each meeting and the resolutions adopted to be presented at the conference of meteorologists in Paris early in October, 1919, but also the letter of Sir Napier Shaw calling the meeting, and the appendices containing the reports of subcommittees. Sir Napier, in his opening remarks, stated the purpose of the meeting as follows:

"The business of this meeting will be, therefore, mainly the information of the representatives of the several countries upon the points to which the attention of the cooperating services must be directed." A fair idea of the scope of the discussion may be gathered from the following: Codes for upper air observations, and for barometric tendency, daily synoptic charts of the Atlantic, polar research, cloud observations, sea disturbance, visibility, transmission of observations by radio, instruction in meteorology for wireless operators. It is impossible to give a detailed account of these discussions, which were informal; but there is no doubt that the meeting was highly successful and amply fulfilled its purpose.—C. L. M.

INTERNATIONAL METEOROLOGICAL CONFERENCE.

[Reprinted from *Meteorological Office Circular*, Dec. 1, 1919.]

An International Conference of Directors of Meteorological Institutions was held in Paris at the invitation of the French Government from September 30 to October 6. The British Empire was represented by the following: Sir Napier Shaw, Director of the Meteorological Office, Capt. A. J. Bamford (Ceylon), Lieut. Col. Bates (New Zealand), Mr. H. A. Hunt (Commonwealth of Australia), Mr. H. Knox Shaw (Egypt), Mr. C. Stewart (Union of South Africa), Sir Frederick Stupart (Canada), Dr. G. T. Walker (India), Lieut. Grant (Admiralty Meteorological Service). The majority of the allied and neutral countries were represented at the conference, but unfortunately Prof. Marvin, Chief of the Weather Bureau of

the United States, and Prof. Nakamura, Director of the Meteorological Service of Japan, were unable to attend and represent their respective countries.

Sir Napier Shaw was elected president of the conference, M. Angot (France), secretary, and M. Palazzo (Italy), Capt. Ryder (Denmark), Prof. Van Everdingen (Holland) and Sir Frederick Stupart (Canada), vice-presidents.

The first task which the conference set itself was the reestablishment of an international organization for securing cooperation on international lines without which much valuable meteorological effort must inevitably run to waste.

The new organization agreed upon is much on the lines of that which existed before the war. It comprises three bodies (1) Conferences of Directors, (2) the International Meteorological Committee, (3) Commissions. The Conferences, to which the director of any independent observatory or service may be invited, are to be convened every 6 years, not 10 years as heretofore. The Conferences nominate an International Meteorological Committee for the purpose of supervising the carrying out of the decisions of the Conference and generally maintaining international intercourse on meteorological matters during the intervals between the conferences. Membership of this Committee is limited to the directors of independent meteorological services.

The number of members, hitherto restricted to a maximum of 17, has been increased to a maximum of 20. The following were elected members of the present Committee: Sir Napier Shaw (Great Britain), Messieurs Palazzo (Italy), Chaves (Portugal), Nakamura (Japan), Angot (France), Maurer (Switzerland), Sir Frederick Stupart (Canada), van Everdingen (Holland), Ryder (Denmark), Walker (India), Marvin (United States), Jaumotte (Belgium), Hesselberg (Norway), Hunt (Australia), Eginitis (Greece). The remaining five places are left to be filled, as the Committee thinks fit, by cooptation.

Commissions are appointed to discuss and report on special subjects. Commissions on the following subjects were called into being by the Conference:

Agricultural meteorology—President, M. Angot.
Weather telegraphy—President, Lieut. Col. Gold.
Marine meteorology—President, M. van Everdingen.
Solar radiation—President, M. Maurer.

Application of meteorology to aerial navigation—M. Sacconey.

Réseau mondial—President, Sir Napier Shaw.

Exploration of the upper atmosphere—M. Bjerknes.

Terrestrial magnetism and atmospheric electricity—M. Angot.

Polar investigation—President, Sir Napier Shaw.

Having settled the general question of procedure, the Conference passed on to the consideration of practical questions. These discussions ranged over a wide field. Among subjects discussed were meteorological units, the hours of observations for telegraphic reports, the codes to be used the arrangements for securing the transmission of the information by wireless, and the extension of the reports to include more detailed information about clouds and visibility.

Upon the opinion of the Conference being desired as to the unit of pressure which should be adopted for the purposes of international stations, the majority gave a vote in favor of the millibar.

¹ A preliminary report on this meeting by Dr. Bauer was published in the MONTHLY WEATHER REVIEW for July, 1919, p. 449.